

WHAT IS CLAIMED IS:

1. An cabinet, comprising:

an inner cabinet comprising a plurality of inner
5 walls that form an enclosure;

a first phase change material covering at least some
of said plurality of inner walls;

an outer cabinet positioned around said inner cabi-
net and also comprising a plurality of outer walls ar-
10 ranged such that there is a space between said inner and
outer walls; and

a mechanism for drawing air from outside of said
outer cabinet into the space between said inner and outer
walls.

15 2. The cabinet of claim 1, wherein said inner cabinet
comprises top and bottom walls and a plurality of sub-
stantially vertical wall running between said top and
bottom wall.

3. The cabinet of claim 2, wherein said first PCM is ar-
ranged in horizontal compartments covering at least one
of said substantially vertical walls.

4. The cabinet of claim 3, wherein said horizontal com-
partments comprise tubes filled with said phase change
material, said tubes on top of one another on said at
least one of said substantially vertical walls.

5. The cabinet of claim 2, wherein said at least some of
said outer walls are adjacent to said substantially ver-
tical walls, said mechanism for drawing air arranged to
draw outside air between each of said substantially ver-
tical walls and its adjacent one of said outside walls.

6. The cabinet of claim 5, wherein said mechanism for drawing air comprises a fan panel having a plurality of fans, each of which is arranged to draw outside air between one of said substantially vertical walls and its adjacent one of said outside walls.

7. The cabinet of claim 5, wherein said fan panel can selectively operate each of its said plurality of fans to selectively draw outside air between one of said substantially vertical walls and its adjacent one of said outside walls.

8. The cabinet of claim 5, further comprising a controller for controlling said mechanism for drawing air.

9. The cabinet of claim 2, wherein each of said substantially vertical walls comprises a tray for holding said phase change material.

10. The cabinet of claim 1, further comprising a layer of insulation on the inside surface of each of said outer walls.

11. The cabinet of claim 2, wherein said top and bottom walls are covered by a layer of said phase change material.

12. The cabinet of claim 1, wherein said inner cabinet is arranged to hold batteries, said inner cabinet further comprising a hydrogen filter to expel hydrogen from within said inner cabinet.

13. The inner cabinet of claim 1, further comprising a air inlet duct to allow air into said inner cabinet as said hydrogen filter expels said hydrogen.

14. The inner cabinet of claim 13, wherein said inlet duct comprises tube surrounded by a second PCM said inlet duct entering said outer cabinet and running along one of said space between said inner and outer walls and then
5 entering said inner cabinet.

15. A thermally insulated electrical cabinet, comprising:

first and second supports;

a phase-change material disposed between said first
5 and second supports; and

a third support to establish an air gap with said second support;

wherein said phase change-material inhibits heat transfer between said first and third supports.

10

16. The enclosure according to claim 15, wherein said third support comprises an exterior wall for said electrical cabinet.

17. The enclosure according to claim 15, wherein said phase-change material comprises a hydrated salt.

18. The enclosure according to claim 15, wherein said phase-change material comprises a linear crystalline alkyl hydrocarbon.

19. The enclosure according to claim 15, further comprising:

an exterior wall spaced apart from one of said first and second supports to establish an air space.

20. The enclosure according to claim 19, further comprising:

a fan to draw air through said air space.

21. The enclosure according to claim 15, wherein said first support comprises:

a flange adapted to couple said first support to said second support.

22. The enclosure according to claim 15, wherein said second support comprises:

a flange to provide bending stiffness to said second support.

23. The enclosure according to claim 15, further comprising:

a spacer disposed between said first and second supports to maintain a predetermined spacing between said
5 first and second supports.

24. An electrical enclosure, comprising:

a plurality of walls to establish an electrical component cavity; and

a phase-change material substantially covering at
5 least one of said plurality of walls;

wherein said phase change-material insulates said electrical-component cavity from heat energy.

25. The enclosure according to claim 24, wherein said phase-change material comprises a hydrated salt.

26. The enclosure according to claim 24, wherein said phase-change material comprises a linear crystalline alkyl hydrocarbon.

27. The enclosure according to claim 24, further comprising:

a plurality of phase-change material containers disposed on one of said plurality of walls to contain said phase-change material.

28. The enclosure according to claim 24, further comprising:

an exterior wall spaced apart from at least one of said plurality of phase-change material containers to establish an air space.

29. The enclosure according to claim 28, further comprising:

a fan to draw air through said air space.

30. An electrical enclosure, comprising:

a plurality of walls establishing an electrical component cavity;

a phase-change material; and

means for containing said phase-change material, said means for containing disposed on one of said plurality of walls to establish insulation against heat energy; wherein said phase-change material provides insulation for said electrical enclosure.

10

31. The enclosure according to claim 30, wherein said phase-change material comprises a hydrated salt.

32. The enclosure according to claim 30, wherein said phase-change material comprises a linear crystalline alkyl hydrocarbon.

33. The enclosure according to claim 30, further comprising:

a plurality of phase-change material containers disposed on one of said plurality of walls to contain said phase-change material.

34. The enclosure according to claim 30, further comprising:

an exterior wall spaced apart from at least one of said plurality of phase-change material containers to establish an air space.

35. The enclosure according to claim 34, further comprising:

a fan to draw air through said air space.

36. A method of insulating an electrical enclosure, comprising:

placing a phase-change material in a plurality of containers;

placing said containers between at least two supports; and

coupling said supports to said electrical enclosure; wherein said phase-change material provides insulation for said electrical enclosure from heat energy.

10

37. The method according to claim 36, further comprising:

coupling a fan to said electrical enclosure to induce air movement over said containers.

38. The method according to claim 36, wherein said placing comprises:

pouring said phase-change material in said plurality of containers, said phase-change material in liquid form
5 during said pouring.

39. An electrical enclosure, comprising:

a phase-change panel;

an exterior panel spaced adjacent to said phase change panel; and

5 a fan to circulate air between said phase change panel and exterior panel;

wherein said fan reduces thermal energy introduced to said phase-change panel by said exterior wall.

40. The electrical enclosure according to claim 39, wherein said phase-change panel comprises:

a plurality of containers; and

a phase-change material disposed in said containers
5 to absorb heat energy.

41. The electrical enclosure according to claim 39, wherein said phase-change panel comprises:

spacers to maintain a cavity for a phase-change material disposed in said phase-change panel.